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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/590,903	02/12/2007	Takaaki Oba	036911-7	4378

78198 7590 10/20/2010

Studebaker & Brackett PC
One Fountain Square
11911 Freedom Drive, Suite 750
Reston, VA 20190

EXAMINER	
MAWARI, REDHWAN K	
ART UNIT	**PAPER NUMBER**
3663	

MAIL DATE	DELIVERY MODE
10/20/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/590,903	OBA ET AL.	
	Examiner	Art Unit	
	REDHWAN MAWARI	3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 July 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) *16* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 August 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Response to Amendment

This Office Action is responsive to Applicant's amendment and request for reconsideration of application 10/590,903 filed on August 28, 2006.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4, 12 and 14 are rejected under 35 U.S.C. 103(a) as obvious over Yanaka (JP 2004-175230) in view of Watanabe (JP 2001 030933) and Shimizu et al. (5,729,107).

Consider claim 1, Yanaka discloses a travel control apparatus for a wheel-driven vehicle, comprising: steering operation configured to receive steering input to steer a wheel to be steered of the vehicle ([paragraph 0013]); steering angle detector configured a steering angle of the wheel ([paragraph 0016]); the steering angle being a direction and steered angle of the wheel to be steered; a steering actuator which changes the steering angle of the steering wheel ([paragraph 0013]); steering controller

configured to control the steering actuator so that the steering angle of the wheel, which is detected by the steering angle detector, becomes a target angle of the steering wheel which is set in response to an operation command outputted from the steering operation device [(paragraph 0021]), and traveling speed regulator configured to regulate the traveling speed of the vehicle in accordance with an operational state of the steering operation device and an actuation state of the steering actuator ([paragraph 0023]); Yanaka did not explicitly disclose the steering actuator at a first actuation speed if the size of the steering angle, which is obtained on the basis of detection information from the steering angle detector, is a predefined reference amount or lower, and to actuate the steering actuator at a second actuation speed, which is lower than the first actuation speed, for the same operation command when the size of the steering angle exceeds the reference amount;

Watanabe teaches wherein the steering control controller is configured to actuate the steering actuator at a first actuation speed if the size of the steering angle, which is obtained on the basis of detection information from the steering angle detector, is a predefined reference amount or lower, and to actuate the steering actuator at a second actuation speed, which is lower than the first actuation speed, for the same operation command when the size of the steering angle exceeds the reference amount (see at least abstract, claims 1-3, paragraph 10, 12, 14, 27, and 36);

accordingly, it would have been obvious to an ordinary skilled person in the art to incorporate the invention of Watanabe into the invention of Yanaka for the purpose of enhancing the performance of the vehicle at different conditions;

Watanabe in view of Yanaka do not explicitly disclose wherein the steering control controller is configured to actuate the steering actuator such that the larger the detected steering angle with respect to a straight forward direction of the wheel, the slower the actuation speed of the steering actuator actuated by the steering controller;

Shimizu teaches wherein the steering control controller is configured to actuate the steering actuator such that the larger the detected steering angle with respect to a straight forward direction of the wheel, the slower the actuation speed of the steering actuator actuated by the steering controller (see at least claim 2);

accordingly, it would have been obvious to an ordinary skilled person in the art to incorporate the invention of Shimizu into the invention of Yanaka in view of Watanabe so the steering effort which the vehicle operator is required to apply to the steering wheel is suitably controlled under all conditions of the road surface.

Consider claim 2, Yanaka in view of Watanabe discloses wherein the traveling speed regulator is configured to compare the target steering angle of the wheel, which is set in accordance with an operational state of the steering operation device, with the detected steering angle of the steering wheel, which is detected by the steering angle detector, and, when difference between the target steering angle and the detected steering angle is a predetermined value or higher, to regulate the traveling speed of the vehicle to a predetermined speed or lower ([paragraph 0024]).

Consider claim 3, Yanaka in view of Watanabe disclose wherein the traveling speed regulator configured to control and compare the target steering angle of the wheel, which is set in accordance with an operational state of the steering operation

device, with the detected steering angle of the wheel, which is detected by the steering angle detector, and gradually reducing the traveling speed of the vehicle as the difference between the target steering angle and the detected angle increases ([paragraph 0025]).

Consider claim 4, Yanaka in view of Watanabe disclose wherein the traveling speed regulator is configured to set a deceleration which increases as the difference increases, and performs a control to gradually reduce the traveling speed of the vehicle on the basis of the set deceleration ([paragraph 29 and 30]).

Consider claim 12, Watanabe teaches wherein the steering controller is configured to actuate the steering actuator at the first actuation speed when the target steering angle is set so that the size of the steering angle becomes the reference amount or lower from the state in which the size of the steering angle exceeds the reference amount, even if the size of the steering angle still exceeds the reference amount (see at least abstract, claims 1-3, paragraph 10,12,14,27, 36 and FIG. 1, 3, 4).

Consider claim 13, Watanabe teaches wherein the larger the steering angle with respect to a straight forward direction of the steering wheel, the steering angle being detected by the steering angle detector, the slower the actuation speed of the steering actuator actuated by the steering controller (see at least abstract, claims 1-3, paragraph 10,12,14,27, 36 and FIG. 1, 3, 4).

Consider claim 14, Yanaka in view of Watanabe disclose a steering mechanism having a pair of knuckle arms for swing ably supporting the steering wheels around kingpin axes and a tie rod for connecting the pair of knuckle arms ([paragraph 0014]),

wherein the steering actuator drives the steering mechanism to change the steering angles of the steering wheels ([paragraph 0014 and 0015]), the steering angle detector is attached to one of the pair of right and left steering wheels ([paragraph 0016]), and the steering controller performs a control for actuating the steering actuator so that one of the steering angles of the pair of right and left steering wheels detected by the steering angle detector becomes the target steering angle which is set in response to an operation command outputted from the steering operation device [(paragraph 0021]).

Claims 5-10 are rejected under 35 U.S.C. 102 as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Yanaka (JP 2004-175230) in view of Watanabe (JP 2001 030933), Kawashima (6,542,801) and further in view of Shimizu et al. (5,729,107).

Consider claim 5, Kawashima teaches a steering operation speed detector configured to obtain an operation speed of the steering operation device, wherein, when the operation speed of the steering operation device, which is obtained by the steering operation speed detector, is a predetermined value or higher, the traveling speed regulator regulates the traveling speed of the vehicle so that the traveling speed of the vehicle becomes a predetermined speed or lower (see at least abstract).

Accordingly, it would have been obvious to an ordinary skilled person in the art to incorporate the invention of Kawashima into the invention of Yanaka in view of

Watanabe for the purpose of enhancing the performance of the vehicle at different conditions.

Consider claim 6, Kawashima further teaches a steering operation detector configured to obtain an operation speed of the steering operation device, wherein, when the operation speed of the steering operation device, which is obtained by the steering operation speed detector, is a predetermined value or higher, the traveling speed is configured gradually to reduce the traveling speed of the vehicle as the operation speed increases (see at least FIG. 2).

Consider claim 7, Kawashima further teaches wherein the traveling speed regulator is configured to set a deceleration which increases as the operation speed increases, and to perform a control to gradually reduce the traveling speed of the vehicle on the basis of the set deceleration (see at least FIG. 2).

Consider claim 8, Kawashima further teaches a steering actuator actuation speed detector configured to obtain an actuation speed of the steering actuator,

wherein, when the actuation speed of the steering actuator, which is obtained by the steering actuator actuation speed detection means detector, is a predetermined value or higher, the traveling speed regulator is configured to regulate the traveling speed of the vehicle so that the traveling speed of the vehicle becomes a predetermined speed or lower (see at least FIG. 2).

Consider claim 9, Kawashima further teaches a steering actuator actuation speed detector configure to obtain an actuation speed of the steering actuator,

wherein, when the actuation speed of the steering actuator, which is obtained by the steering actuator actuation speed detector, is a predetermined value or higher, the traveling speed regulator is configured to perform a control to gradually reduce the traveling speed of the vehicle as the actuation speed increases (see at least FIG. 2).

Consider claim 10, Kawashima further teaches wherein the traveling speed regulator is configured to set a deceleration which increases as the actuation speed increases, and to perform a control to gradually reduce the traveling speed of the vehicle on the basis of the set deceleration (see at least abstract and FIG. 2).

Claim 15 is rejected under 35 U.S.C. 103(a) as obvious over Yanaka (JP 2004-175230) in view of Watanabe (JP 2001 030933), Tanaka (JP 2003 327150) and further in view of Shimizu et al. (5,729,107).

Consider claim 15, Tanaka teaches wherein the steering mechanism is characterized in that a difference is generated between the steering angles of the pair of right and left wheels when the vehicle turns, and

the target steering angle is set for one of the pair of right and left wheels to which the steering angle detector is attached, in accordance with an operation direction and the amount of operation of the steering operation device, and

the steering controller is configured to perform a control to actuate the steering actuator on the basis of the characteristic of the steering mechanism so that the steering angle of one of the pair of right and left steering wheels, which is detected by

the steering angle detector, becomes the target steering angle which is set in accordance with the operation direction and the amount of operation of the steering operation device (see at least paragraph 10, 25, 30).

Accordingly, it would have been obvious to an ordinary skilled person in the art to incorporate the invention of Tanaka into the invention of Yanaka in view Watanabe for the purpose of enhancing the performance of the vehicle at different conditions.

Response to Arguments

Applicant's arguments have been fully considered but are not persuasive. In particular the applicant argues:

Applicant respectfully submits that the torque of a steering actuator is not in any way equivalent to speed of the steering actuator. That is, Shimizu does not teach, disclose, or suggest the feature wherein the larger the detected steering angle, the slower the actuation speed of the steering actuator.

In Shimizu, the torque is adjusted so as to control the effort needed to turn the steering wheel under certain road conditions, such as slippery roads, for example. By reducing the power assist of the steering system, the operator of a vehicle is prevented from excessively steering the vehicle. Applicant respectfully submits that there is no relationship between controlling the actuation speed based on detected steering angle of the presently claimed invention and controlling the amount of torque output from the

steering actuator to provide power steering assistance to the driver of the vehicle of Shimizu. With respect to Watanabe, Applicant respectfully submits again that Watanabe generally describes to reduce the steering speed at the both ends of the steering angle (or range) to avoid a shock caused at the both ends. Specifically, as described in the abstract thereof, the electric power steering device of Watanabe provides a constantly light steering operation of a steering wheel and to reduce shock when the steering angle of the steering wheel reaches the maximum steering angle in the electric power steering device. Hence, Watanabe does not describe the feature wherein the steering control controller is configured to actuate the steering actuator such that the larger the detected steering angle with respect to a straight forward direction of the wheel, the slower the actuation speed of the steering actuator actuated by the steering controller, as recited in independent claims 1 and 16.

In response to applicant's argument, examiner respectively disagrees. Applicant is reminded that claims must be given their broadest reasonable interpretation. Given the broadest interpretation, as claimed it is the examiner's position, the reference of record teaches what he is argued. Watanabe discloses means for detecting the steering speed of the steering wheel, and means for detecting steering angle, and Watanabe discloses reducing the steering speed at the both ends of the steering angle to avoid a shock caused at the both ends (see at least abstract). Examiner introduces a secondary reference to teach "the larger the detected steering angle with respect to a straight forward direction of the wheel, the slower the actuation speed of the steering actuator".

Shimizu teaches a control device for an electric actuator, wherein the target output torque of the electric actuator is at least SHARPLY REDUCED from a normal value when detected steering angle is greater that a maximum permissible steering angle (see at least col. 8, lines 8-12, wherein the speed of the steering actuator is slower when the steering angle is larger, is construed as steering actuator is sharply reduced when the steering angle is greater than a maximum value.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Redhwan Mawari whose telephone number is 571 270

1535. The examiner can normally be reached on 7:30 AM - 5PM Mon-Fri Eastern Alt Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reaches at 571-272 6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

10/18/2010

/R. M./
Examiner, Art Unit 3663

/Tuan C To/

Primary Examiner

October 20, 2010